excepting that the lines are not interrupted by any undulating or zigzag inequalities. The inferior portion of this effectual armour, consists of the sternum; and the two portions are more or less intimately connected, in the various families, by intervening bones, which must be considered as analogous to the cartilages of the ribs in the Mammifera, and which, in fact, in some genera, remain, to some extent, permanently cartilaginous.

The varieties of form and of development which this part assumes, in the different groups of tortoises, constitute some of the most constant and essential characters by which they are distinguished, and at the same time perfectly accord with the structure of the neck, feet, and tail.

The Testudinidæ or Land Tortoises, which are exposed to continual attacks and dangers, from which their sluggish movements prevent their escape, unprovided as they are with any kind of weapons of offence, require defensive armour of the most secure kind, and capable of affording the strongest resistance to external injury. They are therefore provided with a hard, solid and compact shell, forming an elevated arch, which is calculated to sustain immense pressure. In addition to this, the neck and head can be drawn wholly within the shell; and the legs—the solid and clumsy structure of which can only permit that slow progress by which these animals are characterized,—are admirably adapted, by this very peculiarity of form, as well as by the manner in which they are articulated, and the hard strong scales which, in most cases, protect the anterior portion of them, to defend the more important and vital parts within. Thus, when the animal is at rest, the head and neck are wholly concealed, and the legs entirely occupy the anterior opening between the upper and lower parts of the shell, which opening, in this family, is small and contracted, consistently with the circumscribed extent of motion required by the feet.

In the family of the Emydidæ, or those fresh-water tortoises which approach most nearly in their structure to the foregoing group, the shell is much flatter, and both the anterior and posterior openings between the dorsal and pectoral shields are much more expanded, in order to allow of the more free and extensive motion of the limbs in swimming. The feet also are more slender and moveable; and the toes, instead of being contracted, as in the former case, into

a solid obtuse stump, are considerably expanded, and connected by a membrane, so as to form powerful paddles. The claws, too, which in the Testudinidæ are short and thick, are, in these, long, sharp and strong, to enable them to tear the animal prey on which they subsist.

In this family there is a small group in which the characters indicate a manifest approximation to the Testudinidæ. These are the Box Tortoises, in which we find the limbs more robust, the shell higher and less expanded, and, in short, all the characters intermediate between the terrestrial and the fluviatile forms. The sternum in these is divided into two or three portions, by one or two transverse sections: of these the anterior at least, and in many the anterior and posterior, are moveable; being connected by means of a ligamentous or cartilaginous hinge; and are capable of more or less accurately closing the shell, when the animal is at rest. Of these the *Terrapene clausa* may be considered as approaching most nearly to the Land Tortoises, and *Terrapene europæa* as the most closely allied to the fresh-water group.

The Trionychidæ exhibit perhaps the most remarkable and interesting structure in the whole order. They consist of those tortoises, inhabitants of the fresh water, which have no horny plates covering the shell, or any other part of the body. Instead of this more usual covering, they are invested with a strong coriaceous skin, which covers equally the dorsum and sternum, to the bones of which it is closely attached: there is also a free margin of the same leathery substance; and this circumstance, with the remarkable flatness and expansion of the animal, constitutes a form admirably adapted for concealment in the mud, at the bottoms of rivers and lakes; whilst the extraordinary length of the neck, and the powerful muscles by which it can be suddenly protruded, enable the animal to seize its prey by an instantaneous effort, without the necessity of always quitting its retreat.

Another peculiarity of this group is, that the three outer toes only, of each foot, are furnished with claws. The bones of the sternum are separate, and the ribs are generally united only through a part of their length.

The structure of the marine family, the Cheloniadæ, exhibits the natatorial character in the highest degree, and at once points out these animals as permanent inhabitants of the sea. The whole body is flat,—the shell so small as